

Application No. 10/539188
Responsive to the office action dated November 24, 2009

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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) A method for deuteration of a compound represented by the general formula [1]:



wherein, R^1 represents an alkyl group, an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aralkyl group, or an aralkyl group having at least one carbon-carbon double bond and/or at least one triple bond; R^2 represents an alkyl group or an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group or a hydroxyl group; X represents a carbonyl group or a hydroxymethylene group; R^1 and R^2 may form an alicyclic ring together with a carbon atom contained in X ; provided that R^2 represents an alkyl group, an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aryl group or an aralkyl group when X is a hydroxymethylene group, comprising reacting the compound represented by the general formula [1] under neutral condition with a deuterated solvent other than D_2O in the co-presence of an only one activated catalyst selected from a palladium catalyst, a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst;

provided that when the compound represented by the general formula [1] has at least one carbon-carbon double bond and/or at least one triple bond bound, the catalyst activated in advance is used as the activated catalyst.

2. (Original) The method for deuteration according to claim 1, wherein X is a carbonyl group in the general formula [1].

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3. (Original) The method for deuteration according to claim 1, wherein X is a hydroxymethylene group in the general formula [1].

4. (Canceled)

5. (Previously Presented) The method for deuteration according to claim 1, wherein the deuterated solvent is deuterium oxide (D₂O).

6. (Currently Amended) The method for deuteration according to claim 1, wherein the only one activated catalyst is one obtained by activating a non-activated catalyst selected from a palladium catalyst, a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst by contacting with hydrogen gas or heavy hydrogen gas.

7. (Previously Presented) The method for deuteration according to claim 6, wherein the contact of the non-activated catalyst with hydrogen gas or heavy hydrogen gas is conducted in a deuteration reaction system.

8. (Currently Amended) The method for deuteration according to claim 1, wherein the only one activated catalyst is a catalyst comprising an activated palladium based catalyst.

9. (Original) The method for deuteration according to claim 8, wherein the activated palladium based catalyst is an activated palladium carbon.

10. (Canceled)

11. (Currently Amended) A method for deuteration of a compound represented by the general formula [1]:

R¹—X—R² [1]

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wherein, R^1 represents an alkyl group, an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aralkyl group, or an aralkyl group having at least one carbon-carbon double bond and/or at least one triple bond; R^2 represents an alkyl group or an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group or a hydroxyl group; X represents a carbonyl group or a hydroxymethylene group; R^1 and R^2 may form an alicyclic ring together with a carbon atom contained in X ; provided that R^2 represents an alkyl group, an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aryl group or an aralkyl group when X is a hydroxymethylene group,
comprising reacting the compound represented by the general formula [1] under neutral condition with a deuterated solvent in the co-presence of ~~an only one~~ activated catalyst ~~selected from a palladium catalyst, a platinum catalyst, a rhodium catalyst, a ruthenium catalyst, a nickel catalyst and a cobalt catalyst;~~
provided that when the compound represented by the general formula [1] has at least one carbon-carbon double bond and/or at least one triple-bound bond, the catalyst activated in advance is used as the activated catalyst, and

the compound represented by the general formula [1] is tricyclo[5.2.1.0^{2,6}]decan-8-ol, and the activated catalyst is a catalyst comprising palladium carbon-and platinum carbon.

12. (Original) Tricyclo[5.2.1.0^{2,6}]decan-8-ol wherein deuteration ratio thereof is 60% or more.

13. (Currently Amended) The method for deuteration according to claim 1, provided that when the compound represented by the general formula [1] has at least one carbon-carbon double bond and/or at least one triple-bound bond, hydrogen gas or heavy hydrogen gas is not present in a deuteration reaction system.

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14. (New) The method for deuteration according to claim 1, wherein the only one activated catalyst is a catalyst comprising an activated platinum catalyst.

15. (New) A method for deuteration of a compound represented by the general formula [1]:

R^1-X-R^2 [1]

wherein, R^1 represents an alkyl group, an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aralkyl group, or an aralkyl group having at least one carbon-carbon double bond and/or at least one triple bond; R^2 represents an alkyl group or an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aryl group, an aralkyl group, an alkoxy group, an aryloxy group or a hydroxyl group; X represents a carbonyl group or a hydroxymethylene group; R^1 and R^2 may form an alicyclic ring together with a carbon atom contained in X ; provided that R^2 represents an alkyl group, an alkyl group having at least one carbon-carbon double bond and/or at least one triple bond, an aryl group or an aralkyl group when X is a hydroxymethylene group, comprising reacting the compound represented by the general formula [1] under neutral condition with a deuterated solvent in the co-presence of an only one activated catalyst; provided that when the compound represented by the general formula [1] has at least one carbon-carbon double bond and/or at least one triple bond, the catalyst activated in advance is used as the activated catalyst, and

the compound represented by the general formula [1] is tricyclo[5.2.1.0^{2,6}]decan-8-ol, and the activated catalyst is a catalyst comprising platinum carbon.